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A RELICT POPULATION OF THE FOUR-TOED SALAMANDER HEMIDACTYLIUM SCUTATUM (SCHLEGEL) IN JERSEY COUNTY, ILLINOIS

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ABSTRACT: The discovery of a relict population of the four-toed salamander Hemidactylium scutatum (Schlegel), in Jersey County, Illinois is reported. Notes on habitat, breeding and size are included.

COLLECTION RECORD

Neill (1963) given the range of the four-toed salamander, Hemidactylium scutatum (Schlegel), as "..fairly continuous from extreme southern Maine, extreme southern Quebec, extreme southern Ontario and northern Wisconsin, southward to the Fall line in North Carolina, South Carolina, Georgia, Alabama, and Tennessee; presumably disjunct populations occur in Nova Scotia, Missouri, Arkansas, Louisiana, Georgia and Florida." In Illinois, Hemidactylium scutatum has been known from only 18 specimens -- Cook County (12), Lake County (3), Ogle County (3). All but the Ogle County specimens (18 October 1964) were collected before 1933 (Lynch, 1965). Here I report a second relict population in Jersey County, west-central Illinois, approximately 200 miles southwest of Ogle County locality and separated from it by a broad expanse of unsuitable prairie habitat. The Jersey County site is 76 miles north of the locality of the only published Missouri (Ste. Genevieve County) record (Smith, 1956) and 101 miles northeast of the locality in Reynolds County, Missouri for two specimens in the Southern Illinois University at Edwardsville collection, collected 8 May 1964 by M. O. Lamble and D. Hinton. The Missouri populations are separated from the Jersey County population by the Mississippi River. Geographic separation of the Jersey County population from all other known populations suggests that it is a relict.

SITE DESCRIPTION

The first Jersey County specimen (SIUE 164) was taken 4 April 1967 from inside a concrete spring box at the bottom of a rock creek bed. The specimen was clinging to moss about a foot above the water. No other specimens were found though the immediate area was searched. On 4 May, four more H. scutatum were discovered in a ravine about one mile from the first locality. These individuals were under rocks at the waterline of a leaf-filled pool (3x4 ft.), fed by a cold-flowing spring. Three specimens were under a rock with two nests of eggs, the other about three feet away (SIUE 165, 166, 167). Three of these specimens and one nest of eggs were collected. One female and a nest of 62 eggs were left undisturbed. Collecting at other than the nesting site was greatly hampered by 3-5 feet of leaf litter. Other salamanders may have been present around the pool, but I preferred to leave the habitat undisturbed rather than search further. The surrounding woods consisted of oaks, hickories and hard maples. Some of the oaks were larger than 3 feet in diameter, and the area was littered with large fallen trees.

This is the first record of H. scutatum nests in Illinois, the first record of nests near cold-flowing springs, and the first report of nests on rocks and soil. Wood (1955) reported nests in mosses, sedges, hepatics, under loose bark, in mounds of pine needles and in rotten wood near bog streams, ponds, seepage springs, and stagnant pools in association with deciduous or coniferous woods. Another record of specimens collected near a cold spring is that of Smith (1956) from Ste. Genevieve County, Missouri. This population would probably breed in the spring. These observations suggest that H. scutatum had adapted to breeding in cold spring water in these western relict populations.

EXPERIMENTAL

The three specimens and the eggs from the second Jersey County locality were placed in a glass aquarium in a constant temperature unit (19°C) and maintained until 3 June. During the night of 4 May and early morning of 5 May, one of the salamanders deposited additional eggs on the aquarium glass and on the leaves in the aquarium. The next morning a few more eggs were discovered. On 23 May a single hatchling was discovered, apparently from one of the wild-collected eggs. Five eggs hatched, but an attempt to raise the hatchlings was unsuccessful.

DESCRIPTION OF SPECIMENS

The three females were preserved on 3 June. Measurements and counts on the four specimens were taken immediately after drowning (Table 1). Three had bold, black spots on the venter, but SIUE 166 had a marbled venter with subequal black and white areas. This marbled venter pattern has not been previously reported. The largest previously reported specimen was 100.0mm in total length (Lynch, 1965); SIUE 164 was 107.1mm total length making it a new size record. Comparison of lengths of the four Jersey County specimens with those of other reports (Table 2) suggests that H. scutatum reaches its greatest size in the Illinois relict populations.

TABLE 1

Measurements and Counts of Hemidactylium scutatum collected in Jersey County, Illinois

Specimen	Sex	Total Length (mm)	Snout-vent Length (mm)	Costal Grooves	Costal Folds Between Adpressed Limbs
SIUE 164	F	107.1	47.3	13	3.0
SIUE 165	F	98.1	46.3	12	2.5
SIUE 166	F	94.3	43.0	12	2.5
SIUE 167	F	92.7	40.5	12	2.0

TABLE 2

Mean total length (mm) of various samples of *Hemidactylium scutatum* females

Locality	Number	Mean
Southern Michigan (Blanchard and Blanchard, 1931)	-	74.7
	-	83.7
	-	74.1
Central New York (Bishop, 1941)	-	70.9
Virginia (Wood, 1953)	204	78.4
Jersey County, Illinois	4	98.0

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